IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table, and determines whether to respond to a connection request regarding the ports received from the at least one information processing device

wherein when the number of ports in use is less than the number of ports available for use, the at least one channel control section responds to a connection request received from the at least one information processing device, and when the number of ports in use is equal to the number of ports available for use, the at least one channel control section does not respond to the connection request.

2.   (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection

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request regarding the ports received from the at least one information

processing device~~according to claim 1~~,

wherein~~;~~:

the control information includes the number of ports available for use

among the plurality of ports,

the connection request includes a primitive sequence in a link

initialization processing for initializing linkage between the at least one

information processing device and the plurality of ports,

the at least one channel control section stores in the port control table

the number of ports whose linkage is initialized among the plurality of ports as

the number of ports in use, and

upon receiving the primitive sequence in the link initialization

processing, the at least one channel control section refers to the numbers of

ports available for use and the number of ports in use stored in the port

control table, wherein, when the number of ports in use is less than the

number of ports available for use, the at least one channel control section

sends to the at least one information processing device a primitive sequence

in response to the primitive sequence in the link initialization processing; and

when the number of ports in use is equal to ~~or greater than~~ the number of

ports available for use, the at least one channel control section does not send

to the at least one information processing device a primitive sequence in

response to the primitive sequence in the link initialization processing.

3.   (currently amended)A disk array device comprising:

a plurality of hard disk drives;

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at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection request regarding the ports received from the at least one information processing device~~according to claim 1~~,

wherein:

the at least one channel control section includes a plurality of protocol processors that control the plurality of ports,

the control information includes the number of protocol processors available for use among the plurality of protocol processors,

the connection request includes a primitive sequence in a link

initialization processing for initializing linkage between the at least one

information processing device and the plurality of ports,

the at least one channel control section registers in the port control

table specified protocol processors among the plurality of protocol processors

that control ports whose linkage is initialized among the plurality of ports as

protocol processors in use,

the channel control section stores in the port control table the number

of the protocol processors in use, and

upon receiving the primitive sequence in the link initialization

processing, the at least one channel control section refers to the port control

table and determines whether the protocol processors that control the plurality

of ports are the protocol processors in use,

wherein, when the protocol processors that control the ports are the

protocol processors in use, the at least one channel control section sends to

the at least one information processing device a primitive sequence in

response to the primitive sequence in the link initialization processing; and

wherein, when the protocol processors that control the ports are not the

protocol processors in use, the at least one channel control section refers to

the number of the protocol processors available for use and the number of

protocol processors in use stored in the port control table, and

wherein, when the number of the protocol processors in use is less

than the number of the protocol processors available for use, the at least one

channel control section sends to the at least one information processing

device a primitive sequence in response to the primitive sequence in the link

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initialization processing, and when the number of the protocol processors in use is equal to ~~or greater than~~ the number of the protocol processors available for use, the at least one channel control section does not send to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing.

4.   (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection

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request regarding the ports received from the at least one information

processing device~~according to claim 1~~,

wherein~~,~~:

the at least one channel control section includes a plurality of port

groups each consisting of a set of plural ports among the plurality of ports, the

control information includes the number of port groups available for use,

the connection request includes a primitive sequence in a link

initialization processing for initializing linkage between the at least one

information processing device and the plurality of ports,

the at least one channel control section registers in the port control

table specified port groups among the port groups that include ports whose

linkage is initialized among the plurality of ports as port groups in use,

the channel control section stores in the port control table the number

of the port groups in use, and

upon receiving the primitive sequence in the link initialization

processing, the at least one channel control section refers to the port control

table and determines whether the port groups that include the plurality of ports

are the port groups in use,

wherein, when the port groups that include the plurality of ports are the

port groups in use, the at least one channel control section sends to the at

least one information processing device a primitive sequence in response to

the primitive sequence in the link initialization processing; and

wherein, when the port groups that include the plurality of ports are not

the port groups in use, the at least one channel control section refers to the

number of the port groups available for use and the number of port groups in

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use stored in the port control table, wherein, when the number of port groups in use is less than the number of port groups available for use, the at least one channel control section sends to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing, and when the number of port groups in use is equal to ~~or greater than~~ the number of port groups available for use, the at least one channel control section does not send to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing.

5.   (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection request regarding the ports received from the at least one information processing device~~according to claim 1~~,

the disk array device further comprising:·

a plurality of packages each having a substrate with a circuit formed thereon for realizing the channel control section,

wherein:

the control information includes the number of packages available for use,

the connection request includes a primitive sequence in a link initialization processing for initializing linkage between the at least one information processing device and the plurality of ports,

the at least one channel control section registers in the port control table specified packages among the plurality of packages that include ports whose linkage is initialized among the plurality of ports as packages in use,

the channel control section stores in the port control table the number of the packages in use, and

upon receiving the primitive sequence in the link initialization processing, the at least one channel control section refers to the port control table and determines whether the packages that include the plurality of ports are the packages in use,

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wherein, when the packages that include the plurality of ports are the packages in use, the at least one channel control section sends to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing; and

wherein, when the packages that include the plurality of ports are not the packages in use, the at least one channel control section refers to the number of the packages available for use and the number of packages in use stored in the port control table, wherein, when the number of packages in use is less than the number of packages available for use, the at least one channel control section sends to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing, and when the number of packages in use is equal to or greater than the number of packages available for use, the at least one channel control section does not send to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing.

6.   (currently amended)A disk array device according to claim 1, wherein:

the control information includes the number of logical paths available for use with the at least one information processing device,

the connection request includes a request to establish logical paths with the at least one information processing device,

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the at least one channel control section registers in the port control

table the number of logical paths that have been established as the number of

logical paths in use, and

upon receiving the request to establish logical paths, the at least one

channel control section refers to the number of logical paths available for use

and the number of logical paths in use stored in the port control table,

wherein, when the number of logical paths in use is less than the

number of logical paths available for use, the at least one channel control

section responds to the request to establish logical paths and establish the

logical paths, and

wherein, when the number of logical paths in use is equal to ~~or greater~~

~~than~~ the number of logical paths available for use, the at least one channel

control section does not respond to the request to establish logical paths.

7.   (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are

connectable to at least one information processing device via cables, and that

receives data input/output requests from the least one information processing

device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected

to the plurality of hard disk drives and that sends data input/output requests to

the plurality of hard disk drives based on the data input/output requests to the

plurality of hard disk drives that are received by the at least one channel

control section; and

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a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection request regarding the ports received from the at least one information processing device~~according to claim 1~~,

wherein:

the control information indicates an availability of the plurality of ports,

the connection request includes a primitive sequence in a link initialization processing for initializing linkage between the at least one information processing device and the plurality of ports,

the at least one channel control section includes at least one channel processor that governs the overall control of the channel control section, at least one protocol processor that controls the plurality of ports, and a register that is referred to by the at least one protocol processor,

the at least one channel processor refers to the availability of the ports stored in the port control table, and sets the availability of the ports in the register, and

upon receiving the primitive sequence in the link initialization processing, the at least one protocol processor refers to the register, wherein, when the ports are permitted to be used, the at least one protocol processor

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sends to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing; and

when the ports are-not permitted to be used, the at least one protocol processor does not send to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing.

8. (currently amended)A click array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection

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request regarding the ports received from the at least one information processing device~~according to claim 1~~,

wherein:

the at least one channel control section includes at least one channel processor that governs the overall control of the channel control section, at least one protocol processor that controls the plurality of ports, and a register that is referred to by the at least one protocol processor,

the control information indicates an availability of the at least one protocol processor,

the connection request includes a primitive sequence in a link initialization processing for initializing linkage between the at least one information processing device and the plurality of ports,

the at least one channel processor refers to the availability of the at least one protocol processor stored in the port control table, and sets the availability of the at least one protocol processor in the register, ~~and~~

upon receiving the primitive sequence in the link initialization processing; the at least one protocol processor refers to the register, wherein, when the at least one protocol processor is permitted to be used, the at least one protocol processor sends to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing; and

when the at least one protocol processor is not permitted to be used, the at least one protocol processor does not send to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing.

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9.   (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection request regarding the ports received from the at least one information processing deviceaccording to claim 1,

wherein:

the at least one channel control section includes at least one channel processor that governs the overall control of the channel control section, at least one protocol processor that controls the plurality of ports, a register that

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is referred to by the at least one protocol processor, and at least one port group including sets of the plurality of ports,

the control information indicates an availability of the at least one port group,

the connection request includes a primitive sequence in a link initialization processing for initializing linkage between the at least one information processing device and the plurality of ports,

the at least one channel processor refers to the availability of the at least one port group stored in the port control table, and sets the availability of the at least one port group in the register, ~~and~~

upon receiving the primitive sequence in the link initialization processing, the at least one protocol processor refers to the register, wherein, when the at least one port group is permitted to be used, the at least one protocol processor sends to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing~~;~~, and

when the at least one port group is not permitted to be used, the at least one protocol processor does not send to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing.

10.   (currently amended)A disk array device <u>comprising:</u>
<u>a plurality of hard disk drives;</u>

<u>at least one channel control section having a plurality of ports that are</u>
<u>connectable to at least one information processing device via cables, and that</u>

receives data input/output requests from the least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section; and

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein,

wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, and the at least one channel control section refers to the control information set in the port control table and determines whether to respond to a connection request regarding the ports received from the at least one information processing device~~according to claim 1~~,

wherein:

the at least one channel control section includes a plurality of packages each having a substrate with a circuit formed thereon for realizing the channel control section,

the at least one channel control section includes at least one channel processor that governs the overall control of the channel control section, at least one protocol processor that controls the plurality of ports, and a register that is referred to by the at least one protocol processor,

.the control information indicates an availability of the packages,

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the connection request includes a primitive sequence in a link

initialization processing for initializing linkage between the at least one

information processing device and the plurality of ports,

the at least one channel processor refers to the availability of the

packages stored in the port control table, and sets the availability of the

packages in the register, and

upon receiving the primitive sequence in the link initialization

processing, the at least one protocol processor refers to the register, wherein,

when the packages are permitted to be used, the at least one protocol

processor sends to the at least one information processing device a primitive

sequence in response to the primitive sequence in the link initialization

processing, and

when the packages are not permitted to be used, the at least one

protocol processor does not send to the at least one information processing

device a primitive sequence in response to the primitive sequence in the link

initialization processing.

11.   (currently amended)A disk array device according to claim 2,

further comprising:

a management terminal that is communicatably connectable,

wherein:

the management terminal includes a user interface that notifies the

at least one channel control section of a change in the number of ports

available for use, and

upon receiving a request to change the number of ports available for use from the management terminal, the at least one channel control section changes the number of ports available for use stored in the port control table, and refers to the number of ports in use stored in the port control table,

wherein, when the number of ports available for use is equal to or greater than the number of ports in use, and there are connected/not operating ports among the plurality of ports that are connected to the cables but whose linkage is not initialized, the at least one channel control section sends to the at least one information processing device a primitive sequence in the link initialization processing for the connected/not operating ports in a number less than a difference between the number of ports in use and the number of ports available for use, and

when the number of ports available for use is less than the number of ports in use, the at least one channel control section sends to the at least one information processing device a primitive sequence in a link disconnection processing for ports among the plurality of ports whose linkage is initialized such that the number of ports in use becomes equal to the number of ports available for use.

12.   (currently amended)A disk array device according to claim 2, further comprising a management terminal that is communicatably connectable,

wherein:

the management terminal includes a user interface that designates a port number of a first port among the plurality of ports whose linkage is

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initialized, and a second port number of a port that is connected to the cable but whose linkage is not initialized, and that notifies the at least one channel control section of a switching request to switch the first port and the second port, and

upon receiving the switching request, the at least one channel control section sends to the information processing device a primitive sequence in a link disconnection processing for the first port whose linkage is initialized, and sends to the information processing device a primitive sequence in the initialization processing for the second port that is connected but whose linkage is not initialized.

13.   (currently amended)A disk array device according to claim 2, wherein:

the number of ports available for use is set in each of a plurality of time zones, and

the channel control section refers to the number of ports available for use and the number of ports in use in a time zone that includes the current time among the plurality of time zones,

wherein, when the number of ports available for use is equal to ~~or~~ ~~greater than~~ the number of ports in use, and there are connected/not operating ports among the plurality of ports that are connected to the cables but whose linkage is not initialized, the at least one channel control section sends to the at least one information processing device a primitive sequence in the link initialization processing for the connected/not operating ports in a

number less than a difference between the number of ports in use and the number of ports available for use, and

when the number of ports available for use is less than the number of ports in use, the at least one channel control section sends to the at least one information processing device a primitive sequence in a link disconnection processing for ports among the plurality of ports whose linkage is initialized such that the number of ports in use becomes equal to the number of ports available for use.

14.   (currently amended)A disk array device according to claim 1, further comprising:

a management terminal that is communicatably connectable, wherein the management terminal includes an interface that sets in the port control table the control information that is one of the number of ports available for use, the number of protocol processors available for use, the number of port groups available for use, the number of packages available for use, the number of logical paths available for use, an availability of each of a plurality of port groups, and an availability of each of a plurality of packages.

15.   (currently amended)A disk array device according to claim 1, further comprising:

a management terminal that is communicatably connectable,

wherein the shared memory includes a performance monitoring table that sets a measurement time interval for measuring a port usage rate of each

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of the plurality of ports, and a port usage rate threshold with respect to the port usage rate,

the at least one channel control section measures the port usage rates of the plurality of ports in the measurement time intervals set in the performance monitoring table, stores the port usage rates of the plurality of ports in the performance monitoring table, and informs the management terminal of any of the plurality of ports having the port usage rates exceeding the corresponding respective port usage rate thresholds.

16.   (currently amended)A disk array device according to claim 15, wherein the management terminal includes a user face-interface that designates each of the plurality of ports and each of the measurement time intervals, obtains from the performance monitoring table a port usage rate of the port designated during the measurement time interval designated, and displays the port usage rate obtained.

17.   (currently amended)A method for controlling a disk array device, the disk array device comprising a plurality of hard disk drives, at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives a data input/output request from the least one information processing device to the plurality of hard disk drives, at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends a data input/output request to the plurality of hard disk drives based on the data input/output request to the plurality of hard disk drives that is received by

the at least one channel control section, and a shared memory that is

accessible by the at least one channel control section and the at least one

disk control section for reading and writing data therein, wherein the shared

memory stores a port control table that sets control information indicating

whether the plurality of ports are permitted for use, the method comprising the

steps, conducted by the at least one channel control section of:

referring to the control information set in the port control table; and

when the number of ports in use is less than the number of ports

available for use, responding to a connection request received from the at

least one information processing device; and

when the number of ports in use is equal to the number of ports

available for use, not responding to the connection requestdetermining

whether to respond to a connection request regarding the ports received from

the at least one information processing device.

18.   (currently amended)A method for controlling a disk array device

the disk array device comprising a plurality of hard disk drives, at least one

channel control section having a plurality of ports that are connectable to at

least one information processing device via cables, and that receives a data

input/output request from the least one information processing device to the

plurality of hard disk drives, at least one disk control section that is

communicatably connected to the plurality of hard disk drives and that sends

a data input/output request to the plurality of hard disk drives based on the

data input/output request to the plurality of hard disk drives that is received by

the at least one channel control section, and a shared memory that is

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accessible by the at least one channel control section and the at least one

disk control section for reading and writing data therein, wherein the shared

memory stores a port control table that sets control information indicating

whether the plurality of ports are permitted for use, the method comprising the

steps, conducted by the at least one channel control section of:

referring to the control information set in the port control table; and

determining whether to respond to a connection request regarding the

ports received from the at least one information processing device~~according~~

~~to claim 17~~,

wherein the control information includes the number of ports available

for use among the plurality of ports, and the connection request includes a

primitive sequence in a link initialization processing for initializing linkage

between the at least one information processing device and the plurality of

ports, and

the method further comprising the steps, conducted by the at least one

channel control section, of:

storing in the port control table the number of ports whose linkage is

initialized among the plurality of ports as the number of ports in use;

receiving the primitive sequence in the link initialization processing

through the plurality of ports;

referring to the numbers of ports available for use and the number of

ports in use stored in the port control table;

sending to the at least one information processing device a primitive

sequence in response to the primitive sequence in the link initialization

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processing when the number of ports in use is less than the number of ports available for use; and

not sending to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing when the number of ports in use is equal to ~~or greater than~~ the number of ports available for use.

19. (currently amended)A method for controlling a disk array device the disk array device comprising a plurality of hard disk drives, at least one channel control section having a plurality of ports that are connectable to at least one information processing device via cables, and that receives a data input/output request from the least one information processing device to the plurality of hard disk drives, at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends a data input/output request to the plurality of hard disk drives based on the data input/output request to the plurality of hard disk drives that is received by the at least one channel control section, and a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein, wherein the shared memory stores a port control table that sets control information indicating whether the plurality of ports are permitted for use, the method comprising the steps, conducted by the at least one channel control section, of:

referring to the control information set in the port control table; and

determining whether to respond to a connection request regarding the

ports received from the at least one information processing device~~according to claim 17~~,

wherein the control information indicates an availability of the plurality of ports, the connection request includes a primitive sequence in a link initialization processing for initializing linkage between the at least one information processing device and the plurality of ports, and the at least one channel control section includes at least one channel processor that governs the overall control of the channel control section, at least one protocol processor that controls the plurality of ports, and a register that is referred to by the at least one protocol processor, and

the method comprising the steps, conducted by the at least one channel processor, of:

referring to the availability of the ports stored in the port control table; and

setting the availability of the ports in the register, and

the <u>method further comprising the</u> steps, conducted by the at least one protocol processor, of:

receiving the primitive sequence in the link initialization processing;

referring to the availability of the ports sent in the register;

sending to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing, when the ports are permitted to be used; and

not sending to the at least one information processing device a primitive sequence in response to the primitive sequence in the link initialization processing when the ports are not permitted to be used.

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20. (currently amended)A disk array device comprising:

a plurality of hard disk drives;

at least one channel control section having a plurality of ports that are connectable to at least one information processing device via fiber cables, and that receives data input/output requests from the at least one information processing device to the plurality of hard disk drives;

at least one disk control section that is communicatably connected to the plurality of hard disk drives and that sends data input/output requests to the plurality of hard disk drives based on the data input/output requests to the plurality of hard disk drives that are received by the at least one channel control section;

a shared memory that is accessible by the at least one channel control section and the at least one disk control section for reading and writing data therein;

a cache memory that is used by the at least one channel control section and the at least one disk control section to temporarily store data in association with the data input/output request; and

a management terminal that is communicatably connectable,

wherein the channel control section includes:

at least one protocol processor that is communicatably connected to the plurality of ports, and controls sending and receiving data to and from the information processing device,

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at least one channel processor that is communicatably connected to the at least one protocol processor, the shared memory and the cache memory, and governs the overall control of the channel control section, and

a local memory that is communicatably connected to the at least one channel processor and is accessed by the at least one channel processor to read and write data therein,

wherein:

the management terminal sets in the port control table the number of ports available for use among the plurality of ports,

the at least one channel processor stores in the port control table the number of ports in use that are permitted to be used among the plurality of ports,

the at least one protocol processor inquires the at least one channel processor of an availability of the ports, when connecting the fiber cables to the ports and upon receiving a primitive sequence in a link initialization through the ports,

the at least one channel processor refers to the number of ports available for use and the number of ports in use stored in the port control table, notifies the at least one protocol processor of a permission to use the ports when the number of ports in use is less than the number of ports available for use, and notifies the at least one protocol processor of a prohibition to use the ports when the number of ports in use is equal to ~~or greater than~~ the number of ports available for use, and

the at least one protocol processor initializes linkages in response to the primitive sequence in the link initialization processing upon receiving a

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notification of the permission to use from the at least channel processor, and

does not respond to the primitive sequence in the link initialization upon

receiving a notification of the prohibition to use.